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(54) SHAVING COMPOSITIONS

(71) We, COLGATE-PALMOLIVE COMPANY, a Corporation organised under the Laws of the State of Delaware, United States of America, of 300 Park Avenue, New York, New York 10022, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pressurized foaming shaving compositions.

In accordance with the present invention a pressurized foaming shaving composition in a valved container adapted to maintain the composition under pressure and dispense it when desired upon opening of the valve thereof, comprises an organic liquefied gas propellant to pressurize the composition in the container and aid in discharging it therefrom, and a shave cream base comprising an aqueous medium, a surface active foaming agent, mineral oil, lanolin and urea. Preferably the shave cream base contains 0.25 to 1% of the mineral oil, 0.005 to 0.025% of the lanolin and 0.001 to 0.006% of the urea.

The presence of the combination of the mineral oil, lanolin and urea improves the quality of the shave, providing a moist, comfortable, easy shave which leaves the skin feeling smooth, soft and conditioned. Such results have been confirmed by *in vivo* tests against a previously known superior shaving cream. The said combination of substances when employed in the specified proportions also enhances the shaving foam, making it thicker and richer.

The shaving compositions may be self-heating, if desired, but although such products soften hairs more quickly, they are not essential for the attainment of the desired results of this invention.

The major constituent of the shaving composition is an aqueous medium in which the other components are dissolved, emulsified or dispersed. It also often functions as a reaction medium and to some extent may participate in reactions, the principal of which is the neutralization of soap or other synthetic detergent acid or acids. Minor proportions of organic solvents may be present in the medium, as may be dissolved salts, usually in small or trace quantities, but it is preferred that the aqueous medium be water alone. Thus, distilled or preferably deionized water will normally be used. The organic solvents that may be present in the aqueous medium are usually limited to the extent of no more than 20% of the water content, preferably less than 10% and most preferably less than 5%, but usually no such solvents will be present. Among acceptable solvents may be named alcohols of 1 to 4 carbon atoms, preferably those of 2 or 3 carbon atoms, e.g. ethanol.

To produce the desired foam a surface active foaming agent is employed. The preferred foaming agents are anionic surface active compounds, such as anionic detergents. Of these, soaps of higher fatty acids, desirably substantially saturated higher fatty acids, are preferred, especially those in which the soap-forming material is a mixture of an alkanolamine, such as triethanolamine, and alkali metals so that the soaps are water-soluble. At least a portion of the soap will advantageously be an alkanolamine soap. The water-soluble soaps may be prepared by the saponification of fatty acids, natural oils and fats or mixtures thereof. The term "higher" as used herein in relation to fatty acids and fatty alcohols, and to aliphatic and alkyl radicals, means that those compounds and radicals contain from 12 to 18 carbon atoms. Preferably the higher fatty acid soaps will be mixed sodium, potassium and triethanolamine soaps, e.g. of mixed stearic, palmitic and coconut oil fatty acids.

In addition to the higher fatty acid soaps, synthetic anionic organic detergents may be utilized. In some cases these will be employed in partial replacement of the soaps and in other, less preferred, instances may completely replace the soaps. The synthetic

anionic detergents will usually include a higher aliphatic or alkyl moiety, preferably linear, and preferably terminally joined to the hydrophilic moiety which will most frequently be a sulphuric or sulphonic acid salt, the salt-forming ion being alkali metal, ammonium or di- or tri-lower alkanolamine, wherein the lower alkanolamine is of 1 to 4 carbon atoms. Among the useful anionic detergents are higher alkyl sulphates, higher alkyl sulphonates, higher alkyl benzene sulphonates, ethoxylated higher fatty alcohol sulphates, monoglyceride sulphates, higher fatty acid amides of amino-lower carboxylic acids such as sodium lauroyl sarcoside, phosphates and phosphonates corresponding to the above-mentioned sulphates and sulphonates, and sulphates and sulphonates of nonionic surface active agents such as those of polyoxyethylene glycols, of block copolymers of ethylene oxide and propylene oxide chain terminated with propylene glycol, and of polyethoxylated middle alkyl phenols. The above listing is only illustrative and additional listings of suitable synthetic anionic detergents and surface active agents which are useful in the present compositions may be found in the text *Detergent and Emulsifiers* 1969, by McCutcheon and in *Surface Active Agents and Detergents* Vol. II (1958) by Schwartz, Perry and Berch. Specific examples of useful anionic synthetic organic detergents are: triethanolamine lauryl sulphate; linear dodecyl benzene sodium sulphonate; potassium coconut oil monoglyceride sulphate; ammonium paraffin sulphonate; and amonium polyoxyethylene stearyl alcohol sulphate.

A foam stabilizer or mixture of such stabilizers is also advantageously employed. Such materials may include organic gums and colloids, serving as thickening agents to maintain the foam in the shape in which it was applied, but it will often be found preferable to utilize the lower alkanolamides of higher fatty acids for this purpose. The best of these is lauric-myristic diethanolamide wherein the fatty acid of the amide is a mixture of lauric and myristic acids, usually in a proportion of 1:3 to 3:1 and preferably about 1:1. Thus, such material is really a mixture of the two different diethanolamides but is generally named for convenience as lauric-myristic diethanolamide or LMDEA. Other dialkanolamides of higher fatty acids, preferably saturated fatty acids, and mixtures thereof, are also acceptable foam stabilizers. Of such fatty acids, lauric, myristic, palmitic and stearic acids are most preferred. The lower alkanols may be of 1 to 4 carbon atoms, preferably of 1 to 3 carbon atoms and most preferably of 2 or 3 carbon atoms, e.g. ethanol and isopropanol. In addition to the dialkanolamides, corresponding monoethanolamides are also useful, but to a lesser extent. In such compounds the higher fatty acid and lower alkanol moieties may be the same or mixed. Examples of such other foam stabilizers include coconut oil fatty acids monoethanolamide; hydrogenated tallow fatty acids diisopropanolamide; lauric di-n-propanolamide and stearic monoethanolamide. There may be mixed with such materials thickening agents such as natural or synthetic organic gums, e.g., carageenan, gum tragacanth, alginates, gelatin, sodium carboxymethyl cellulose, polyvinyl alcohol and polyvinyl pyrrolidone. It has been found that in the present compositions additional foam stabilizing effects may be obtained by the inclusion of short chain diols and/or triols. Of these, the most useful are propylene glycol and glycerol, the former being preferred. Sorbitol can also be present.

A propellant material is used to pressurize the container and to assist in discharging the foaming shaving composition. A wide variety of such propellants is known in the aerosol industry, including carbon dioxide, nitrogen, nitrous oxide, argon, air and other inorganic or inert gases, but to obtain the desired uniformly foaming compositions of the present invention it is necessary to employ an organic liquefied gaseous propellant, usually a C_1—C_4 hydrocarbon or halogenated hydrocarbon liquefied gaseous propellant, preferably, with respect to the unhalogenated hydrocarbons, of 3 or 4 carbon atoms and, with respect to the halogenated hydrocarbon, of 1 to 3 carbon atoms. The hydrocarbons include n-butane, isobutane and propane and preferably are employed as a mixture of isobutane and propane most preferably containing 80 to 90 parts by weight of isobutane and 10 to 20 parts by weight of propane, the preferable ratio being about 7:1. The halogenated hydrocarbons are preferably those in which the halogen is fluorine and/or chlorine. Most preferably, the halogenated propellants include fluorine in the molecule. Exemplary of such materials are monochlorotrifluoromethane, dichlorodifluoromethane, trichlorodifluoroethane, dichlorotetrafluoroethane, monochlorotetrafluoroethane, trichloromonofluoromethane and tetrachlorodifluoroethane. The halogenated hydrocarbons or the hydrocarbons are usually employed in mixtures, and mixtures of halogenated and unhalogenated hydrocarbons may also be used. The mixture is normally selected having regard to factors such as the pressure developed, solubilizing properties, corrosion prevention and emulsion formation. The pressure developed by such a mixture will usually be 10 to 100 psi (lbs./sq. in.) and more commonly will be from 20 to 70 or 30 to 60 psi, most preferably about 50 psi.

Pressures given are gauge pressures. Generally, a propellant mixture employed will include one propellant having an equilibrium pressure at room temperature greater than 30 psi and one having an equilibrium pressure at room temperature of less than 30 psi, of the latter being used, but other mixtures are also useful. The propellant is usually emulsified into the aqueous phase by means of the foaming agent.

In addition to the constituents of the present compositions described above, various other materials are also advantageously added to give the product additional desired properties. For example, perfumes are usually employed and colourants may be desirable. Additional emollients, solvents, emulsifiers, suspending agents, buffers, conditioning agents, antioxidants, bactericides and proteins may be included in the compositions for their particular effects. Normally, total contents of each of such adjuvants will be less than 10% of the product, preferably less than 5% thereof, and often there will be less than 1% of each present. It will generally be desirable to maintain the Ph of the shaving cream in the range of 5 to 10.5, preferably from 7 to 10.5; this may be done with the aid of buffering materials or control of acid and base contents.

The proportions of the various constituents in the preferred foaming shaving compositions are from 70 to 90% of water, 5 to 15% of anionic surface active foaming agent such as a higher fatty acid soap, 0.5 to 3% of foam stabilizer, and 1 to 10% of propellant. Preferred ratios include from 75 to 85% of water, 7 to 13% of mixed higher fatty acid soaps, 0.7 to 1.5% of higher fatty acid dialkanolamides and 2 to 7% of propellant mixture. In some compositions it may be desirable to have present 1 to 5% of an auxiliary foam stabilizer and emollient, such as propylene glycol, and a small amount such as 0.1 to 0.5% of another emollient, such as coconut oil. The normal percentage of perfume, which may be a mixture of essential oils, perfume aldehydes and ketones and suitable solvents and fixatives, will be from 0.1 to 3%. The ratio of high pressure propellant to low pressure propellant in the mixed propellant system will usually be less than 1 : 1.

Surprisingly, it has been found that when using the combination of mineral oil, lanolin and urea within the specified amounts, the foam is thicker than when using either less or more of this combination. Thus, within the stated limits, the presence of this combination provides an improved, thicker, richer foam while an excess of this combination may cause the formation of a thin, runny product.

The following Example illustrates the invention. In the Examples and elsewhere throughout the specification, unless otherwise indicated, parts, percentages and ratios are by weight.

EXAMPLE

Ingredients	Preferred Composition %	Preferred Range %
Water	84.086	70—90
Stearic acid (double pressed)	6.380	3—15
Stearic acid, (triple pressed)	0.440	3—15
Triethanolamine	0.128	0.05—3
Sodium hydroxide (38% solution)	0.430	QS
Potassium hydroxide (45.4% solution)	2.300	QS
Lauric myristic diethanolamide	0.890	up to 4
Propylene glycol	2.710	up to 5
White mineral oil extra light	0.550	0.25—1
Lanolin	0.010	0.005—0.025
Urea	0.003	0.001—0.006
Coconut oil	0.220	up to 3
Coconut fatty acids	0.890	up to 5
Diammonium phosphate	0.020	up to 1
Oxyquinoline sulphate	0.001	up to 1
1-Menthol	0.022	up to 1
Methyl *p*-hydroxy benzoate	0.018	up to 1
Propyl p-hydroxy benzoate	0.002	up to 1
Red dye (1% solution)	0.150	up to 2
Perfume	0.750	up to 3

The fatty acids react with the bases to form soaps.

To a valved aerosol container there are added 198.5 parts of the above composition and 5.7 parts of a mixture of 80 parts of isobutane and 20 parts of propane. The

containers are shaken to aid in producing an emulsion. They are packed and are ready for shipment and use.

Before use, the container is shaken slightly and the valve button is depressed, allowing dispensing of a desired amount of shaving foam through the dispensing spout. Such foam when used gives a superior, more moist and more comfortable and closer shave, and leaves the skin feeling smoother, softer, relaxed and conditioned.

WHAT WE CLAIM IS:—

1. A pressurized foaming shaving composition in a valved container adapted to maintain the composition under pressure and dispense it upon opening of the valve thereof, which composition comprises an organic liquefied gaseous propellant to pressurize the composition in the container and aid in discharging it therefrom, and a shave cream base comprising an aqueous medium, a surface active foaming agent, mineral oil, lanoline and urea.

2. A pressurized foaming shaving composition according to Claim 1 which also contains a foam stabilizer.

3. A pressurized foaming shaving composition according to Claim 2 wherein the foam stabilizer is a higher fatty acid alkanolamide.

4. A pressurized foaming shaving composition according to any of the preceding Claims which contains 0.25 to 1% of mineral oil, 0.005 to 0.025% of lanolin and 0.001 to 0.006% of urea, based on the weight of the shave cream base.

5. A pressurized foaming shaving composition according to Claim 4 which contains 70 to 90% of water, 5 to 15% of higher fatty acid soap and 1 to 10% of the propellant.

6. A pressurized foaming shaving composition according to Claim 5 wherein the higher fatty acid soap is a mixture of sodium, potassium and triethanolamine soaps.

7. A pressurized foaming shaving composition according to Claim 2 or Claim 3 and any of Claims 4 to 6 which contains 0.5 to 3% of foam stabilizer.

8. A pressurized foaming shaving composition substantially as described in the Example.

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